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The association between serum irisin, vitamin D biomarkers, and body composition indices in chronic kidney disease

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Objectives: Skeletal health is associated with systemic impairment of mineral bone metabolism. In patients with chronic kidney disease (CKD). Irisin is a myokine, that plays an important role in muscle and bone metabolism. It has suggested as a potential biomarker for muscle and bone disorders in CKD patients. There are few studies on the relationship between irisin and vitamin D, an important factor of skeletal health and metabolic bone disease in CKD patients. We analyze the difference in renal function according to serum irisin level and investigate the relationship between irisin, vitamin D, and various body composition indices.

Methods: We analyzed blood and urine samples from a total of 137 patients diagnosed with CKD stage G2 to G5 and measured the level of serum irisin and various vitamin D biomarkers. The patients conducted bioelectrical impedance analysis to assess their body composition.

Results: The mean age of total patients was 62.3±12.3 years old, and 61.3% of patients were male. The most common comorbid disease was hypertension (78.1%). The mean values of eGFR, serum albumin, and urine protein/creatinine ratio were 41.2±17.6 mL/min/1.73m^2, 4.4±0.4 mg/dL, and 0.9±1.4 mg/mgCr, respectively. The mean value of eGFR was the highest in the group of serum irisin ≥ 12 ng/mL (45.7±16.2 mL/min/1.73m^2) and the lowest in the group of serum irisin < 10 ng/mL (41.2±17.6 mL/min/1.73m^2) (p=0.011). There was no difference in all vitamin D biomarkers and body composition indices according to serum irisin level **(Table 1)**.

Conclusions: The mean value of eGFR was lower in the group with low irisin level. However, any vitamin D biomarkers and body composition indices did not show significant association with serum irisin level. Further studies with a larger number of patients are required.

Table 1. Characteristics of participants according to serum irisin level